

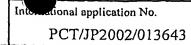
PCT



(PCT Article 36 and Rule 70)

Applicant's or agent's file reference DP-907PCT	FOR FURTHER ACTION	ACTION SeeNotificationofTransmittalofInternational Preliminary Examination Report (Form PCT/IPEA/416)		
International application No.	International filing date (day/	month/year)	Priority date (day/month/year)	
PCT/JP2002/013643	26 December 2002 (26	.12.2002)	28 December 2001 (28.12.2001)	
International Patent Classification (IPC) or n H01M 4/02, 4/58, 4/38, 10/40	ational classification and IPC			
Applicant	NEC CORPORAT	TION		
This international preliminary exam and is transmitted to the applicant ac		d by this Interr	national Preliminary Examining Authority	
2. This REPORT consists of a total of	4 sheets, includi	ng this cover s	heet.	
This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).				
These annexes consist of a total of sheets.				
3. This report contains indications relating to the following items:				
Basis of the report	Basis of the report			
II Priority	II Priority			
III Non-establishment of	III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability			
IV Lack of unity of inv	Lack of unity of invention			
V Reasoned statement citations and explan	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement			
VI Certain documents of	VI Certain documents cited			
VII Certain defects in th	VII Certain defects in the international application			
VIII Certain observations	VIII Certain observations on the international application			
		·		
Date of submission of the demand		of completion (of this report	
26 December 2002 (26.12.2002)		02 De	ecember 2003 (02.12.2003)	
Name and mailing address of the IPEA/JP		Authorized officer		
Facsimile No.		Telephone No.		





I. Ba	sis of the r	report		
1. W	ith regard	to the elements of the international application:*		
		ternational application as originally filed		
	the de	escription:		
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3. Wi	the langer	anal application was filed, unless otherwise indicated units were available or furnished to this Authority in the funguage of a translation furnished for the purposes of integration of the international application (uniquage of publication of the international application (uniquage of the translation furnished for the purposes of 3). It is any nucleotide and/or amino acid sequence examination was carried out on the basis of the sequence and in the international application in written form, and subsequently to this Authority in written form, and subsequently to this Authority in computer readable tatement that the subsequently furnished written is attional application as filed has been furnished.	following language sternational search (under Rul under Rule 48.3(b)). of international preliminary of disclosed in the international ce listing: readable form. le form. sequence listing does not	examination (under Rule 55.2 and/ ional application, the international go beyond the disclosure in the
in ti and	This rep beyond to this report (70.17).	the description, pages the claims, Nos the drawings, sheets/fig port has been established as if (some of) the amendme the disclosure as filed, as indicated in the Supplemental sheets which have been furnished to the receiving Office as "originally filed" and are not annexed to this	al Box (Rule 70.2(c)).** ice in response to an invitation in the series of the series	tion under Article 14 are referred to contain amendments (Rule 70.16
** Any	replaceme	ent sheet containing such amendments must be referred	d to under item 1 and annexe	ed to this report.

NARY EXAMINATION REPORT

Internati	onal application No.
	PCT/JP02/13643

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement			
. Statement			
Novelty (N)	Claims	1-13	YES
	Claims		NO .
Inventive step (IS)	Claims	3, 9-13	YES
	Claims	1, 2, 4-8	МО
Industrial applicability (IA)	Claims	1-13	YES
	Claims	·	МО

2. Citations and explanations

Document 1: JP, 2001-283833, A (SANYO ELECTRIC CO., LTD.), 12 October 2001 Document 2: JP, 11-288705, A (TOYOTA MOTOR CORPORATION), 10 October 1999

Document 3: JP, 07-235330, A (SONY CORPORATION), 05 September 1995

The subject matter of claims 1 and 4-8 does not involve an inventive step on account of document 1 cited in the ISR. Document 1 describes a lithium-ion secondary battery that uses a negative electrode provided with a first active substance layer consisting of carbon on a collector and provided with a second active substance layer consisting of a Si or other metal or semiconductor alloyed with Li. thereon. Also, the effects of the invention are described as exhibiting high discharge capacity and charge/discharge efficiency, preventing peeling of the active substance from the collector, and being able to achieve excellent cycle characteristics. Therefore in the invention described in document 1, in order to provide a battery with both high energy density and excellent cycle characteristics, setting the negative electrode so as to realize optimum effects and the extent to which to use it could easily be conceived by a person skilled in the art. Also, claims 1 and 4-8 of the present application express only the lithium content of the second layer in a state of 100% depth of discharge when used. They do not indicate a battery designed so as to achieve this sort of lithium content or a manufacturing method therefor. This state could be obtained in the invention described in document 1 also, so there is no distinctive feature as a physical invention.

The subject matter of claim 2 does not involve an inventive step on account of documents 1-3 cited in the ISR. Documents 2 and 3 describe doping the negative electrode in advance with lithium equivalent to an irreversible capacity amount in order to obtain a lithium-ion secondary battery with high capacity and excellent cycle characteristics. Therefore, in the invention described in document 1, in order to provide a battery with both high energy density and excellent cycle characteristics, employing the lithium doping means described in documents 2 and 3 and the extent to which to make the negative electrode capacity greater than the positive electrode capacity could easily be conceived by a person skilled in the art.

The subject matter of claims 3 and 9-13 is novel and has an inventive step. In a lithium-ion secondary battery, designing the amount of lithium so as to satisfy equations (1) and (2) described in claim 3, using a lithium content in the negative electrode's second layer so that it is 31~67 atomic-% after completion of discharge, and a manufacturing method that includes the step of adding lithium in a capacity that satisfies equations (A)~(D) described in claim 13 are not described in any of the documents cited in the ISR and appear to be non-obvious to a person skilled in the art.

INTERNATIONAL PREDMINARY EXAMINATION REPORT

VI. Certain documents cited

1.	Certain	published	documents	(Rule	70.1	0)
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Application No. Patent No.

Publication date (day/month/year)

Filing date (day/month/year)

Priority date (valid claim) (day/month/year)

JP 2002-015729 A

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2. Non-written disclosures (Rule 70.9)

Kind of non-written disclosure

Date of non-written disclosure (day/month/year)

Date of written disclosure referring to non-written disclosure (day/month/year)